

“EXHIBIT H”



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Forensic Video Analysis Report

Federal Rule of Civil Procedure 26(a)(2)(B)

Requested by:

David Klehm
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Torts & Condemnation
600 W. Broadway, Suite 1800
San Diego, CA 92101

Case:

Solis, Edgar v. County of Riverside, et al. (CHP)
(SD2023800661)

BEI Case Number:

KLEH-SOL-0524

Forensic Video Analyst:

Parris Ward

Date:

May 31, 2024

Basis of Examination and Scope

I received 25 video files via electronic file transfer. I was asked to analyze the videos to determine what information could be derived from them in relation to an officer-involved shooting (OIS). Two of the videos were from body-worn cameras (BWCs), and the rest were from 3 security cameras near the shooting location.



Figure 1. Google Earth aerial image of the incident location on Hilmer Drive. The approximate locations and field of view of the four security cameras are shown. The cameras are numbered 1-4 for reference.

Fact Summary

On March 2, 2022 at approximately 4:09 PM, the Riverside County Regional Gang Task Force, composed of Riverside Sheriff's Deputies, Hemet Police and California Highway Patrol (CHP) officers, attempted to apprehend Edgar Solis in the City of Hemet, California. Officers chased Mr. Solis through a residential area. Mr. Solis was armed with a handgun. An officer involved shooting occurred in the side yard of a residence at 614 Hilmer Drive. See Figure 1. CHP

Officer Michael Bell fired 8 shots. Riverside Sheriff's Deputy Salvador Waltmire fired 11 shots. Mr. Solis' revolver contained 5 bullets in the cylinder along with one expended shell casing. Three security cameras at the shooting location, and one at 603 Hilmer Drive captured portions of the incident. The camera locations are shown in Figure 1. Two officers responding to the location were wearing BWCs, which captured part of the incident. The video recordings from these cameras are the subject of this analysis.

Examination Notes

The following video conversions and still images presented in this document are a true and accurate representation of the data acquired from the original videos submitted. Each image is simply a converted and/or clarified version of that which it is purported to be.

The forensic methodologies utilized to obtain and clarify images from the recorded video files are widely utilized in the Forensic Video Analysis scientific community.

Video, at its most basic level, is simply a series of individual pictures or "frames" that when displayed quickly and sequentially gives the illusion of motion. To be as precise as possible in this report, I will refer to individual frame numbers. The video files that accompany this report are annotated with frame numbers.

Tools Utilized for the Examination

The software tools used for my forensic analysis are shown below in Table 1.

Table 1. Software used for forensic analysis.

Software	Manufacturer	Version
Amped FIVE – Forensic Video Processing Software	Amped Software	Build 20240146 Rev. 33279
Adobe AfterEffects – Video Compositing Software	Adobe Systems	Version 23.2.1
Adobe Audition – Sound Editing Software	Adobe Systems	22.5.0.51
Corel Draw – Illustration Software	Corel Corporation	Version 2021

Materials Received

I received 25 video files via electronic file transfer. Two of the videos were from body-worn cameras (BWCs). One video file was from a camera located at the front of a residence at 603 Hilmer Drive. Twenty-two files are from 3 cameras located at the residence where the shooting

occurred, 614 Hilmer Drive. Of the video files recorded at this location, only 4 are relevant to the events leading up to and including the shooting. The rest captured events after the shooting occurred.

I also located and reviewed the Riverside County Sheriff's critical incident video presentation published on YouTube, which gives a synopsis of events.

Of the 25 video files I received from the California Department of Justice, 7 are most relevant to the OIS. The characteristics of the 7 video files examined in this analysis are shown below in Table 2.

Table 2. Characteristics of video files.

File Name	Description	Resolution	FPS	Duration
Axon_Body_3_Video_2022-03-02_1609_X6033338V.mp4	Sgt. Paez BWC	1280x720	30	6:13
002.Video from Waltmire BWC.AVI.AVI	Deputy Waltmire BWC	848x480	30	12:58
603 Hillmer.MOV 4 shots + 3 shots to 19 second mark.MOV	Security camera at 603 Hilmer (Camera 1)	480x272	20	2:09
KTKM2053.MP4	614 Hilmer front yard #1 (Camera 2)	1280x720	24	0:15
MMXM3627.MP4	614 Hilmer front yard #2 (Camera 2)	1280x720	24	0:15
MMXM3627.MP4	614 Hilmer back yard A (Camera 3)	1280x720	24	0:05
UGGK1245.MP4	614 Hilmer back yard B (Camera 4)	1920x1080	29.97	0:15

Video Analysis

Sergeant Paez' BWC Recording

Hemet Police Sergeant Arthur Paez' BWC recording is from an Axon Body 3 camera. The camera was set to record at a resolution of 1280x720 pixels at a frame rate of approximately 30 frames per second (FPS). The video consists of 11,199 frames and has a running time of 6 minutes and 13 seconds.

The Axon Body 3 is usually configured such that the first portion of the video has no sound. This is because that portion of the video occurred before recording was triggered. The cameras

continuously buffer muted video images prior to being triggered, which are included in the recording when the camera is activated. This is done so that officers reacting to an event, who trigger their cameras just after the event occurred, can still capture footage of what happened prior. In this case, there is 30 seconds of pre-trigger buffered video at the start of the recording.

The Axon Body 3 cameras superimpose a timestamp in the upper right corner of the image, followed by the time zone offset from Coordinated Universal Time (UTC) or Greenwich Mean Time (GMT). I added frame numbers to the video clips I produced so that specific frames can be precisely identified.

Metadata present in the BWC file includes the camera serial number, indicating that the file is an original file and not a transcoded copy.

It should be noted that BWCs do not replicate what an officer saw at the time of an incident. BWCs are usually mounted to the chest of an officer rather than at eye level. They have ultra-wide-angle lenses that create both optical and perspective distortion. The recordings they produce lack the visual acuity of the human eye. These devices are simply designed to document what happened in front of an officer, rather than what an officer saw or experienced.

Sergeant Paez' BWC recording begins while he is in his vehicle, driving. There is no audio for the first 30 seconds of the recording. At approximately 1 minute, 6 seconds into the recording a female voice can be heard over the radio stating "he has a gun." At approximately 1 minute, 26 seconds, Sergeant Paez appears to turn onto Hilmer Drive. At approximately 1 minute, 30 seconds a male voice can be heard over the radio stating "shots fired," however, no shot sounds are heard on the audio track of the video.

Beginning at approximately 1 minute, 35 seconds, 3 gunshots can be heard on the video as Sergeant Paez brings his vehicle to a stop and opens the driver's door. He exits his vehicle and runs toward the residence at 614 Hilmer Drive behind Riverside Sheriff's Deputy Salvador Waltmire. Deputy Waltmire enters the gate at the north side of the residence and then drops to the ground. Sergeant Paez approaches the gate with his pistol drawn. Mr. Solis can be partially seen sitting on a doorstep, just inside the gate on the right. Beginning at approximately 1 minute, 49 seconds into the video (frame 3279), 11 gunshots can be heard. The audio pattern of these shots is shown in Figure 2.

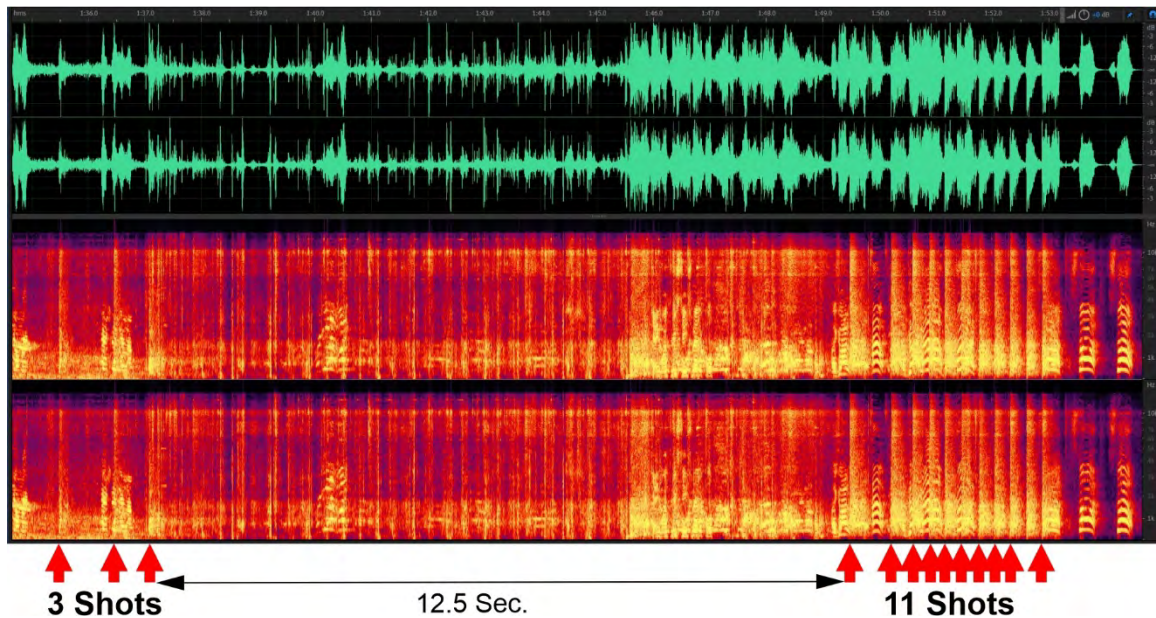


Figure 2. Audio pattern shows the sounds of 3 shots followed 12.5 seconds later by 11 shots.

During the shots, Sergeant Paez retreats from the gate and then reapproaches when the shots conclude. Mr. Solis can now be seen leaning on his right side, still on the doorstep. At 2 minutes, 21 seconds, Sergeant Paez points and states “there’s a gun behind him.” At frame 4791 (2 minutes, 40 seconds) a gun can be seen on the doorstep next to Mr. Solis. See Figure 3. The gun is removed by a Hemet police officer.



Figure 3. Frame 4791 of Sargeant Paez' BWC video shows a gun, highlighted in red and enlarged, being recovered from the doorstep next to Mr. Solis by Hemet Police Officer S. Gordon.

Deputy Waltmire's BWC Recording

Riverside Deputy Salvador Waltmire appears to have been wearing a VIEVU LE4 body-worn camera. The recording I received has a frame rate of approximately 30 frames per second and a resolution of 848x480 pixels. The file contains 23,268 frames and has a running time of 12 minutes and 58 seconds. There is a date and time stamp in the upper left corner of the image.

The video begins with Deputy Waltmire standing outside his vehicle. There is no muted audio at the beginning like on Officer Paez' BWC recording. After approximately 11 seconds, Deputy Waltmire enters his vehicle and begins driving. While he is driving, no radio broadcasts or gunshots can be heard. At 1 minute, 10 seconds, he exits his vehicle at the residence at 614 Hilmer Drive, whereupon 3 shots can be heard. After yelling, "where you at Mike," he runs toward the side gate of the residence and pushes through it. After entering the side yard, he collapses to the ground. Beginning at 1 minute, 25 seconds (frame 2554), 11 gunshots can be heard while the camera is focused on the ground. After Deputy Waltmire stands up and begins covering Mr. Solis, a handgun can be seen on the doorstep. Figure 4 shows the handgun near Mr. Solis' location in frame 3300.



Figure 4. Frame 3300 of Deputy Waltmire's BWC with an enlarged window showing a gun on the doorstep.

Both BWC recordings captured the sounds of all 11 shots fired by Deputy Waltmire; however, they only captured sounds of 3 additional shots fired by Officer Bell or Mr. Solis. Both cameras documented that a gun was immediately recovered at the scene.

603 Hilmer Drive Security Camera (Camera 1 as designated in Figure 1)

This recording has a low-resolution image of 480x272 pixels. It is comprised of 2,581 frames running at 20 frames per second. There is a faintly visible time stamp at the top center of the screen. The time stamp, though difficult to read, matches the time of day shown on the BWC recordings. It is likely that this video is derived from a higher resolution version. The file is in an Apple Quicktime MOV container and contains an Apple creation date in the metadata,

This video may appear to be a continuous recording of the activities on the Hilmer Drive cul-de-sac, but it is not. It is a series of short video clips that have been combined into a single video file. This is characteristic of some motion-activated recording systems. Rather than continuously recording hours of video when nothing is happening, it only records segments in time where motion is detected. Recording hours of digital video requires significant data storage requirements. Limiting recording to only those times when motion is detected conserves storage space on the security system's hard drive. Unfortunately, these systems don't always detect movement and can miss capturing important events entirely.



Figure 5. Frame 80 from the security camera at 603 Hilmer Drive.

The time stamp at the beginning of the video shows 16:02 hours. Four seconds later it jumps ahead to 16:10 hours (at frame 80). See Figure 5. At this point, the image of a person appears in the street and is shown running into the front yard of the residence at 614 Hilmer Drive while the sound of 4 shots can be heard. Deputy Waltmire and Officer Paez can then be seen arriving at the residence in their respective vehicles. The video then jumps ahead approximately 10 seconds at frame 483. Consequentially, the 11 shots fired by Deputy Waltmire are not heard because no video data was stored during that time. Of the 19 shots fired in this event, only 4 can be heard on the audio track of this recording. None of the shots heard on the BWC recordings can be heard.

614 Hilmer Drive Security Cameras (Cameras 2, 3 & 4 as designated in Figure 1)

There are 3 camera views available from 614 Hilmer Drive; one is in the front yard and two are in the backyard. These cameras also appear to be motion activated and only short segments of time are captured.

I received 13 video clips from the camera in the front yard (Camera 2 in Figure 1). All of the clips are black and white and have durations of only 15 seconds each. The image resolution is 1280x720 pixels and the frame rate is 24 fps. Only two of these clips were recorded at the time of the shooting. The file “KTKM2053.MP4” shows an officer running onto the driveway of the residence with his gun drawn. See Figure 6. Shortly thereafter, another officer is seen across the street running toward the residence. Near the end of the clip, a single gunshot can be heard.



Figure 6. Image from the front yard camera at 614 Hilmer Dr. showing an officer with gun drawn.

The next clip in sequence, “MMXM3627.MP4,” shows Deputy Waltmire and Officer Paez running through the front yard. See Figure 7. At 5.7 seconds into the clip, frame 137, the first of the 11 gunshots fired by Deputy Waltmire can be heard.



Figure 7. Image from the front yard camera at 614 Hilmer Dr. showing Waltmire and Paez approaching.

The two backyard cameras briefly show officers in the backyard at the time of the incident. The file “VVPM1227.MP4” is from Camera 3 in Figure 1. This clip is in color and is only 5 seconds. No shots are heard, only the words “get on the ground,” followed by “Mike, where you at?”

The second backyard video clip, “UGGK1245.MP4,” is from camera location 4 in Figure 1 and is 15 seconds long. This clip has a resolution of 1920x1980 and a frame rate of 29.97 fps. At the beginning of the clip, Officer Bell can be seen at the bottom of the screen, moving from right-to-left with his gun drawn yelling, “drop, drop it, drop it.” See Figure 8.



Figure 8. Officer Bell is seen with gun drawn on a backyard camera at 614 Hilmer Dr.

After he exits from view, 3 shots can be heard. After the shots, Officer Patrick Sobazek can be seen at the bottom of the screen moving from right-to-left, saying “Mike, where you at?” Figure 9 shows the statements and gunshot sounds in the audio pattern.

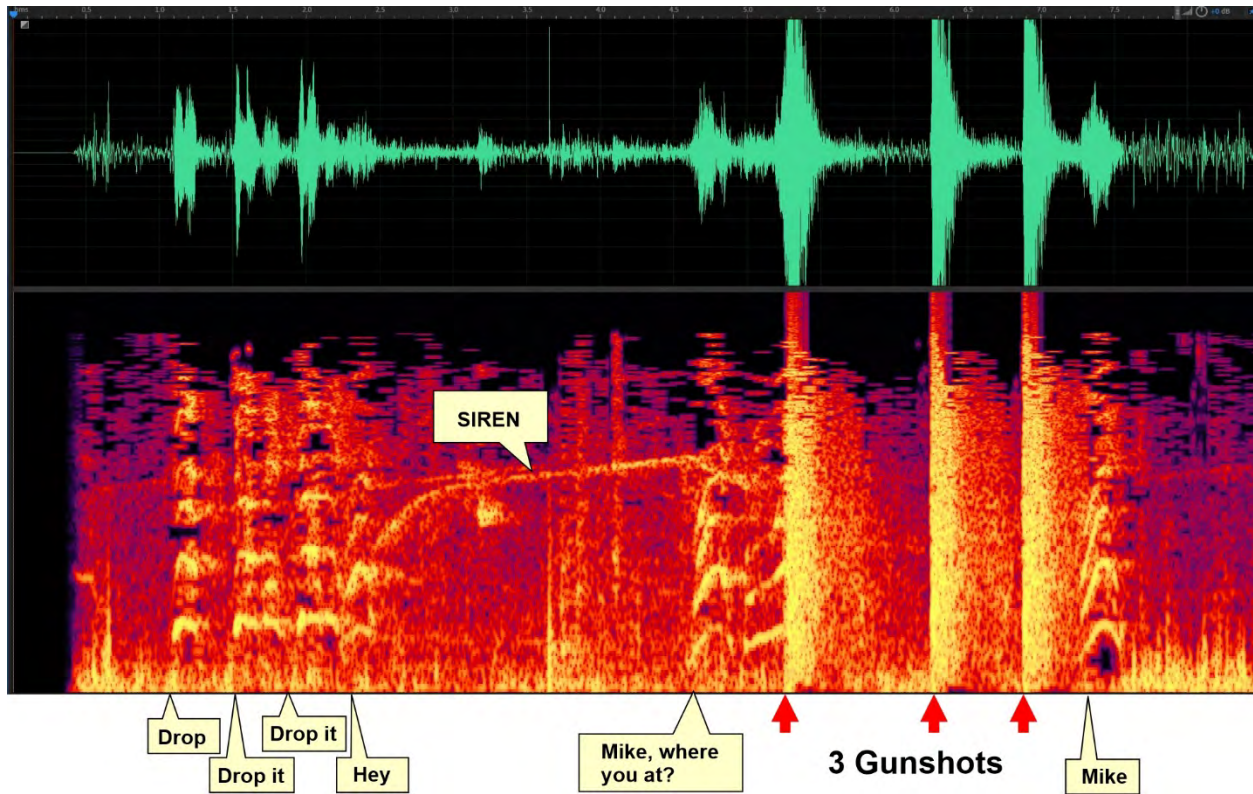


Figure 9. Sound patterns from file UGGK1245.MP4 showing when words were said and gunshots occurred.

Synchronization

To allow further analysis of the incident, I synchronized the relevant videos using Adobe AfterEffects. The synchronization was based on visual and audio cues. Because the BWC videos recorded continuously while the security cameras only recorded short clips, I used the BWC videos as a timeline. The synchronized videos present four views on one screen. I have produced two synchronized videos that accompany this report. The first shows Officer Paez' BWC footage combined with the various security camera views, while the second adds Deputy Waltmire's BWC as well.

The synchronized videos show that there are significant gaps in the security camera footage coverage due to the cameras being motion activated. No single camera recording captured all the shots fired, however more shots can be heard when the videos are combined and synchronized in time. In addition to the 11 shots fired by Deputy Waltmire in the side yard of the residence at 614 Hilmer Drive, 8 additional shots can be heard on the synchronized compilation of videos.

Officer Bell reportedly fired 8 shots; however, there is no way to determine whether the 8 shots heard on the synchronized videos can be attributed solely to Officer Bell. No one is visible on camera firing any of the shots. They can only be heard on the audio tracks. Mr. Solis' revolver had a fired casing in the cylinder. It is possible that he may have fired one of the shots heard in the synchronized videos. It is also possible that one additional shot sound was not captured at all by the various cameras.

Conclusions

1. I received 25 video files, however, only the 2 BWC recordings and 5 security camera videos (see Table 2) are relevant to the events leading up to and including the shooting. The rest of the recordings captured events after the shooting occurred.
2. Hemet Police Sergeant Arthur Paez was wearing an Axon Body 3 BWC. Beginning at approximately 1 minute, 35 seconds, 3 gunshots can be heard on the video as Sergeant Paez exits his vehicle. When he reaches the side gate of 614 Hilmer Drive, Mr. Solis can be partially seen sitting on a doorstep, just inside the gate on the right. Beginning at approximately 1 minute, 49 seconds into the video (frame 3279), 11 gunshots fired by Deputy Waltmire can be heard. The sound patterns of the shots are shown in Figure 2.
3. Deputy Waltmire was wearing a VIEVU BWC. His recording also captured the sounds of 3 shots as he exited his vehicle at the residence followed by the sounds 11 shots he fired.
4. Both BWC cameras documented that a gun was immediately recovered at the scene on the doorstep next to where Mr. Solis was sitting.
5. The security camera recording from 603 Hilmer Drive is not a continuous recording of events. It is comprised of a series of short video clips that have been combined into a single video file. This is characteristic of some motion-activated recording systems. Unfortunately, these systems don't always detect some movement and can miss capturing important events entirely. This camera only captured the sounds of 4 gunshots, and did not capture the sounds of the shots heard on the 2 BWC recordings.
6. There are 13 video clips from the camera in the front yard of 614 Hilmer Drive (Camera 2 in Figure 1) of which only two are relevant. The file "KTKM2053.MP4" shows an officer running onto the driveway of the residence with his gun drawn. See Figure 6. Shortly thereafter, another officer is seen across the street running toward the residence. Near the end of the clip, a single gunshot can be heard. The next clip in sequence, "MMXM3627.MP4," shows Deputy Waltmire and Officer Paez running through the front yard. See Figure 7. At 5.7 seconds into the clip the 11 gunshots fired by Deputy Waltmire can be heard.

7. Officer Bell can be seen in clip “UGGK1245.MP4” at the bottom of the screen, moving from right-to-left with his gun drawn yelling, “drop, drop it, drop it.” After he exits from view, 3 shots can be heard. The sound patterns from this recording can be seen in Figure 9.
8. I was able to synchronize all of the relevant video files so that 4 images can be viewed on one screen simultaneously. This is helpful in analyzing the entire event. The synchronized videos show that there are significant gaps in the security camera coverage due to the cameras being motion activated. No single camera recording captured all the shots fired, however more shots can be heard when the videos are combined.
9. In the synchronized videos I prepared, the sounds of the 11 shots fired by Deputy Waltmire can be heard, along with 8 additional shot sounds. There is no way to determine whether the 8 additional shot sounds can be attributed solely to Officer Bell. Mr. Solis’ revolver had a fired casing in the cylinder indicating he may have fired his gun too. It is possible that he may have fired one of the shots heard in the synchronized videos. It is also possible that additional shot sounds were not captured due to the limitations of the security camera recordings.
10. Some of the videos I produced were brightened, enlarged and annotated to provide better clarity. These are commonly used forensic methodologies completed with forensic software and do not affect the integrity of the original video.

Sincerely,


Parris Ward, CFVA

May 31, 2024

All of the opinions in this report are expressed with a reasonable degree of scientific certainty and are based on the author’s education, training, and experience. As additional information becomes available, the author reserves the right to amend and revise this report.